

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is in contact with and thereby electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer.

2. (Amended) A semiconductor device, comprising:
an insulation layer;

a semiconductor layer formed on the insulation layer;

an element isolation region formed in the semiconductor layer; and

a first element forming region and a second element forming region defined by the element isolation region;

wherein the first element forming region includes both a first bi-polar transistor and a first field effect transistor;

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer; and further comprising:

a first electrode layer that continues to a side section of the first gate electrode layer and reaches the element isolation region,

wherein the first gate electrode layer is formed in a manner to cross over the element forming region,

the source region of the first conduction type is formed in a first region surrounded by the first gate electrode layer in a forming region of the first field effect transistor, the first electrode layer, and the element isolation region,

the drain region of the first conduction type and the collector region of the first conduction type are formed in a second region surrounded by the first gate electrode layer and the element isolation region,

the emitter region of the first conduction type is formed in a third region surrounded by the first gate electrode layer in a forming region of the first bi-polar transistor, the first electrode layer and the element isolation region, and

the first body region of the second conduction type is formed at least below the first gate electrode layer in the forming region of the first field effect transistor, and below a part of the first electrode layer.

4. (Amended) A semiconductor device comprising:
an insulation layer;

a semiconductor layer formed on the insulation layer;

an element isolation region formed in the semiconductor layer; and

a first element forming region and a second element forming region defined by the element isolation region;

wherein the first element forming region includes both a first bi-polar transistor and a first field effect transistor;

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer; and further comprising:

a first layer and a second layer, wherein

the first layer has one end section continuing to the first gate electrode layer or the second layer, and another end section reaching the element isolation region,

the second layer has one end section continuing to the first gate electrode layer or the second layer, and another end section reaching the element isolation region,

the source region of the first conduction type is formed in a first region surrounded by the first gate electrode layer, the first layer and the element isolation region,

the drain region of the first conduction type and the first collector region of the first conduction type are formed in a second region surrounded by the first gate electrode layer, the second layer and the element isolation region,

the first emitter region of the first conduction type is formed in a third region surrounded by the first layer, the second layer and the element isolation region,

the first base region of the second conduction type is formed below a part of the first layer, and below a part of the second layer in the semiconductor layer, and

the first body region of the second conduction type is formed at least below the first gate electrode layer and below a part of the first layer in the semiconductor layer.

6. (Amended) A semiconductor device comprising:
an insulation layer;

a semiconductor layer formed on the insulation layer;

an element isolation region formed in the semiconductor layer; and

a first element forming region and a second element forming region defined by the element isolation region;

wherein the first element forming region includes both a first bi-polar transistor and a first field effect transistor;

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer; and further comprising, in a first element forming region, a second body region of a first conduction type, which is formed in a semiconductor layer between a first base region of a second conduction type and a first collector region of a first conduction type.

7. (Amended) A semiconductor device comprising:
an insulation layer;
a semiconductor layer formed on the insulation layer;
an element isolation region formed in the semiconductor layer; and
a first element forming region and a second element forming region defined by the element isolation region;

wherein the first element forming region includes both a first bi-polar transistor and a first field effect transistor;

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer;

wherein an impurity diffusion layer of the second conduction type is further formed in the first element forming region,

wherein the impurity diffusion layer of the second conduction type is a semiconductor layer in the first region, and is formed in the semiconductor layer between the source region of the first conduction type and the first body region of the second conduction type, and

the source region of the first conduction type and the first body region of the second conduction type are electrically connected to one another through the impurity diffusion layer of the second conduction type.

9. (Amended) A semiconductor device comprising:
an insulation layer;

a semiconductor layer formed on the insulation layer;

an element isolation region formed in the semiconductor layer; and

a first element forming region and a second element forming region defined by the element isolation region;

wherein the first element forming region includes both a first bi-polar transistor and a first field effect transistor;

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer;

and

wherein a third body region of the second conduction type is formed in the semiconductor layer between the first collector region of the first conduction type and the first emitter region of the first conduction type and in the semiconductor layer adjacent to the element isolation region.

10. (amended) A semiconductor device according to claim 8, wherein a contact layer for electrically connecting the source region of the second conduction type and the second contact region of the first conduction type is formed in the second element isolation region, wherein the contact layer is formed in a manner to cross over the source region of the second conduction type and the second collector region of the first conduction type.

11. (amended) A semiconductor device according to claim 9, wherein a fourth body region of the second conduction type is formed in the semiconductor layer between the second collector region of the first conduction type and the second emitter region of the first conduction type, and in the semiconductor layer adjacent to the element isolation region.

12. (Amended) A semiconductor device comprising:
an insulation layer;
a semiconductor layer formed on the insulation layer;
an element isolation region formed in the semiconductor layer; and
a first element forming region and a second element forming region defined by the element isolation region;

wherein the first element forming region includes both a first bi-polar transistor and a first field effect transistor;

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer;

and

wherein the first conduction type is n-type, and the second conduction type is p-type.

13. (Amended) A semiconductor device comprising:

an insulation layer;

a semiconductor layer formed on the insulation layer;

an element isolation region formed in the semiconductor layer; and

a first element forming region and a second element forming region defined by the element isolation region;

wherein the first element forming region includes both a first bi-polar transistor and a first field effect transistor;

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer; and

wherein the first conduction type is p-type, and the second conduction type is n-type.

14. (Amended) A semiconductor device comprising:
an insulation layer;

a semiconductor layer formed on the insulation layer;

an element isolation region formed in the semiconductor layer; and

a first element forming region and a second element forming region defined by the element isolation region;

wherein the first element forming region includes both a first bi-polar transistor and a first field effect transistor;

the first bi-polar transistor includes a first emitter region of a first conduction type, a first base region of a second conduction type, and a first collector region of the first conduction type,

the first field effect transistor includes a first gate electrode layer, a source region of the first conduction type, and a drain region of the first conduction type,

the first field effect transistor further includes a first body region of the second conduction type formed at least between the source region of the first conduction type and the drain region of the first conduction type,

the first body region of the second conduction type is electrically connected to the source region of the first conduction type,

the first body region of the second conduction type is electrically connected to the first base region of the second conduction type,

the drain region of the first conduction type is electrically connected to the first collector region of the first conduction type, and

the source region of the first conduction type is formed structurally isolated from the first emitter region of the first conduction type, and

wherein the second element forming region includes both a second bi-polar transistor and a second field effect transistor,

the second bi-polar transistor includes a second emitter region of the first conduction type, a second base region of the second conduction type, and a second collector region of the first conduction type,

the second field effect transistor includes a second gate electrode layer, a source region of the second conduction type, and a drain region of the second conduction type,

the second field effect transistor further including a first body region of the first conduction type formed at least between the source region of the second conduction type and the drain region of the second conduction type,

the first body region of the first conduction type is electrically connected to the second collector region of the first conduction type,

the source region of the second conduction type is electrically connected to the second collector region of the first conduction type,

the drain region of the second conduction type is electrically connected to the second base region of the second conduction type,

the first collector region of the first conduction type is electrically connected to the second emitter region of the first conduction type, and

the first gate electrode layer is electrically connected to the second gate electrode layer; and

wherein the semiconductor layer is a silicon layer.